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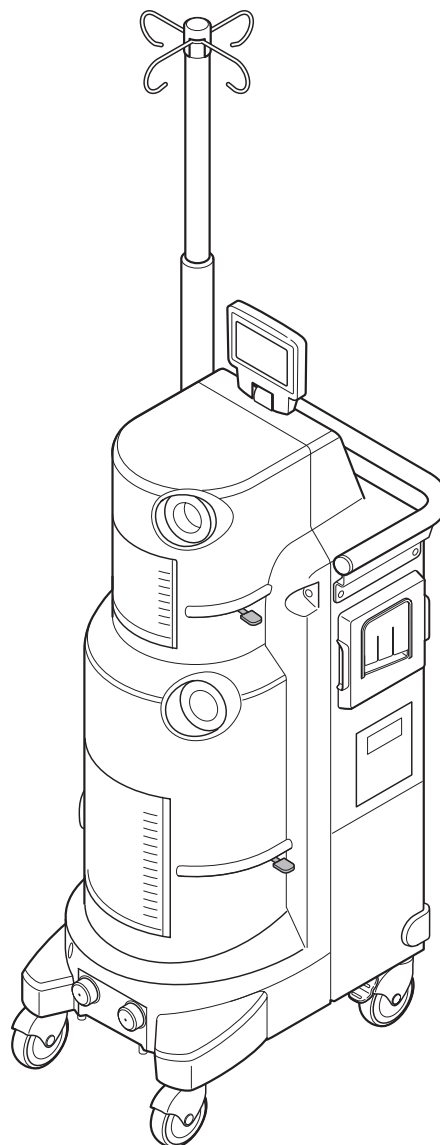
Waste Management System

Installation, Operation and Maintenance Guide

120 V Rover-ULTRA

REF 0702-001-000

Instructions For Use

R_x ONLY

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Important Information

The words WARNING, CAUTION and NOTE have special meaning and should be reviewed.

- WARNING:** Disregarding WARNING information may compromise the safety of the patient and/or health care staff and may result in injury.
- CAUTION:** Disregarding CAUTION information may compromise product reliability and may result in damage.
- NOTE:** NOTE information supplements and/or clarifies procedural information.



A triangle with an exclamation point alerts the health care professional to read and understand the accompanying instructions, especially the operating, maintenance, and safety information.

For Use With

The Stryker Rover (rover) is for use with the Neptune 2 Waste Management System, specifically the Neptune 2 Docking Station (docker).

Indications For Use

The Neptune 2 Waste Management System is intended to be used in the operating room, pathology, surgical center, and doctor's office to collect and dispose of surgical fluid waste.

Description

The rover is a mobile unit used to suction and collect fluid waste and small debris from a surgical site in an operating room. Mobility allows the rover to be relocated to a waste disposal area where the rover's collection canisters may be emptied.

Fluid waste is removed from the surgical site through suction tubes connected to inlet ports of manifold(s) installed in the rover. The fluid waste and small debris are collected in the canister(s) of the rover. The two canister design allows separate canister suction level measurement and volume measurement capability. However, both canisters use a single vacuum pump. A suction level decrease in either canister, due to an open port, may cause the suction level in the other canister to decrease. After collection, the rover is relocated to a docking station located in a waste disposal area. The rover interfaces with the docking station to empty the rover's canister(s) of fluid waste. After disposal, the rover canister(s) are rinsed with clean water and Stryker-approved detergent, if desired, to facilitate cleaning.

The rover also has a height-adjustable, powered IV pole and a smoke evacuator.

Accessory/Disposable Information*



WARNING: Use only Stryker-approved components and detergent, unless otherwise specified. Using other components may result in increased electromagnetic emissions or decreased electromagnetic immunity of the system. DO NOT modify any component or accessory.

Description	REF
Neptune Disposable Manifolds	0702-02X-XXX Series
Neptune Fluid Suction HEPA Filter with Activated Carbon.....	0702-034-000
Neptune Smoke Evacuator ULPA/Charcoal Filter.....	0702-040-000
Smoke Tubing, 3/8 inch x 10 feet.....	0702-045-023
Smoke Tubing, 7/8 inch x 6 feet.....	0702-045-025
PenAdapt™.....	0702-045-027

*If you need more information or a complete list of accessory information, contact your Stryker sales representative or call Stryker Neptune customer service at 1-800-550-7836. Outside the US, contact your nearest Stryker subsidiary.

PenAdapt™ is the trademark of Buffalo Filter.

User/Patient Safety*



WARNINGS:

- Only trained and experienced health care professionals should use this equipment. Before using any system component, or any component compatible with this system, read and understand the instructions. Pay special attention to WARNING information. Become familiar with the system components prior to use.
- The health care professional performing any procedure is responsible for determining the appropriateness of this equipment and the specific technique used for each patient. Stryker, as a manufacturer, does not recommend surgical procedure or technique.
- DO NOT use this system outside the scope of the defined indications for use (for example with Octopus® tissue stabilizer-type devices or Bean Bag body position-type devices).
- ALWAYS close all unused ports and remove all unused tubing to maintain optimal suction levels. The suction levels of each canister are interdependent and linked to a common vacuum source. Failure to comply may result in the unexpected reduction of suction and patient injury.
- DO NOT use this system for applications that require a constant vacuum level.
- The suction level of this product relative to its vacuum limit setting may fluctuate significantly but will not exceed its limit. DO NOT use this system if vacuum fluctuation may cause patient injury. ALWAYS consider the type of surgical procedure before using this system.
- Upon initial receipt and before each use, operate the equipment and inspect each component for damage. DO NOT use any component if damage is apparent.
- Perform recommended maintenance as indicated in these instructions. Only trained and experienced health care professionals should maintain this equipment.
- DO NOT use this equipment in the presence of a mixture consisting of a flammable anesthetic and air or oxygen or nitrous oxide.
- Take special precautions regarding electromagnetic compatibility (EMC) when using medical electrical equipment like this system. Install and place this system into service according to the EMC information contained in this manual. Portable and mobile RF communications equipment can affect the function of this system.
- The Bloodborne Pathogens Standard provided by the United States Occupational Safety and Health Association (US OSHA) requires all workers with exposure to "potentially infectious materials" wear the correct personal protection equipment and be offered immunization against hepatitis B. As an additional precaution, these workers should receive tetanus immunization and boosters when required.
- Handling biohazardous waste is potentially dangerous. ALWAYS follow current local regulations governing biohazardous waste to safely handle and dispose of surgical fluid waste.
- Filters, manifolds, suction tubing, and smoke tubing will contain surgical waste after use. ALWAYS handle these disposable accessories as "potentially infectious materials" after use. ALWAYS wear gloves and protective eye wear when removing and disposing of these disposable accessories.
- DO NOT use the system if leakage of surgical fluid waste occurs. Disconnect power immediately and call Stryker Neptune customer service.
- ALWAYS have more than one person unpack and lift this equipment off the shipping pallet.
- ALWAYS use the handle to move the rover. DO NOT push or pull the rover by grasping any receptacle or the outer surface. NEVER hang any heavy object from the rover handle.
- DO NOT allow fluid of any kind to spill directly onto the exterior surface of the electrically-powered rover.
- ALWAYS ensure the rover is providing suction (vacuum level display is greater than zero) and suction is present at the manifold ports when using an external pumping device connected to the same canister via suction tubing.
- ALWAYS keep hands away from the mating surfaces of the rover and docking station during the docking procedure to avoid a pinch point hazard.
- ALWAYS follow current local regulations governing procedure-specific suction levels to remove fluid waste safely from a surgical site.
- ALWAYS wear gloves and protective eye wear when performing the docking procedure.
- DO NOT use the rover until the docking station has been installed and tested properly.
- DO NOT use the rover until it has been tested properly to ensure functionality.
- DO NOT use the system with patients that are being treated with radioisotopes or hazardous chemotherapy agents.
- The canister scale and fluid volume display are not diagnostic tools. DO NOT use the scale or volume display to accurately calculate the amount of fluid loss from the patient.

* If you need more information, contact your Stryker sales representative or call Stryker Neptune customer service at 1-800-550-7836. Outside the US, contact your nearest Stryker subsidiary.

Features (see figure 1)

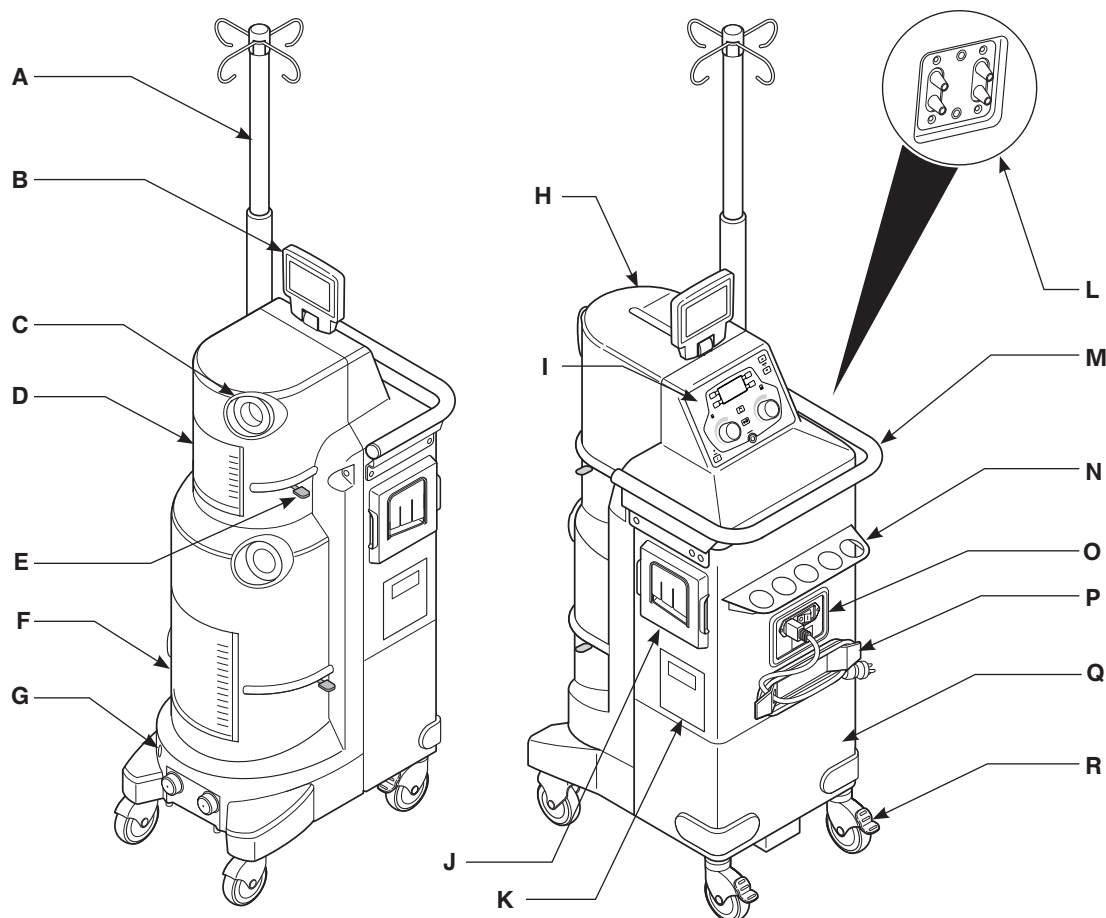


Figure 1 Feature Locations

A	Powered IV Pole - This motor-powered IV pole is capable of holding four three-liter [3000 cc] IV bags, one bag per hook.	H	Speaker - Located inside the rover, provides audible event indicators. See the <i>Audible Event Indicators</i> table.
B	Fluid Level Display - Provides a visual display of the fluid volume values of each collection canister. The display swivels in a 360-degree fashion and pivots for ease of viewing. The units of measurement may be changed to liters [L], cubic centimeters [cc], or milliliters [mL]. Display brightness may also be adjusted.	I	Control Panel - Allows the operation of the rover using dials and push buttons. The panel also provides visual feedback through a control panel display.
C	Manifold Port (two) - Allows installation of a disposable manifold into the canister. The port will close automatically when a manifold is removed. Closure prevents fluid leakage during transport, docking, and a wash cycle and prevents foreign objects from entering the receptacle.	J	Smoke Evacuator Filter Compartment - Allows for the installation and removal of a disposable smoke evacuator filter with an Ultra Low Penetrating Air (ULPA) efficiency rating. A smoke detector device in the filter controls the amount of smoke evacuation based on the amount of smoke present. The smoke evacuator has three distinct modes: off, manual and automatic. The smoke evacuator removes surgical smoke from a surgical site during cautery or laser surgery.
D	Small Fluid Collection Canister - Allows for the collection and containment of liquids. The four-liter canister receives fluid through an installed manifold during the collection of fluid waste. The canister contains a fluid level sensor to ensure the level does not exceed a pre-defined limit. The contents of the small canister may be emptied into the large canister.	K	Fluid Suction HEPA Filter Compartment - Allows for the installation and removal of a disposable fluid suction filter. This filter provides High Efficiency Particulate Air (HEPA) filtration of the air from the 20-liter and 4-liter canisters before the air is evacuated.
E	Canister Access Door/Knob (two) - Each canister has its own access door controlled by its corresponding knob. These doors may be opened during operation to reveal the contents or closed during relocation to conceal the contents.	L	External Vacuum House Ports - (Not available at this time)
F	Large Fluid Collection Canister - Allows for the collection and containment of liquids. The 20-liter canister receives fluid through an installed manifold during the collection of fluid waste. The canister contains a fluid level sensor to ensure the level does not exceed a pre-defined limit.	M	Handle - Allows for relocation and positioning of the rover.
G	Infrared Communication Window - Allows data transfer between the docker and rover. Data transfer is necessary during the docking procedure.	N	Manifold Holder - Allows for the storage of new, unused manifolds.
		O	Power Cord Receptacle/Switch - Connect facility power here using the rover power cord. Push the toggle switch to apply or remove facility power.
		P	Power Cord Bracket/Cord - Store the power cord on the bracket. Use the power cord to connect the rover to facility power.
		Q	Single Vacuum Pump (not shown) - Creates suction for both canisters. If the suction level decreases in either canister, due to an open port, the suction level in the other canister may decrease.
		R	Casters (four) - Four swivel casters allow the rover its mobility. Two of the four casters have locks to prevent inadvertent movement during operation.

Features (cont'd)

Control Panel (see figure 2)

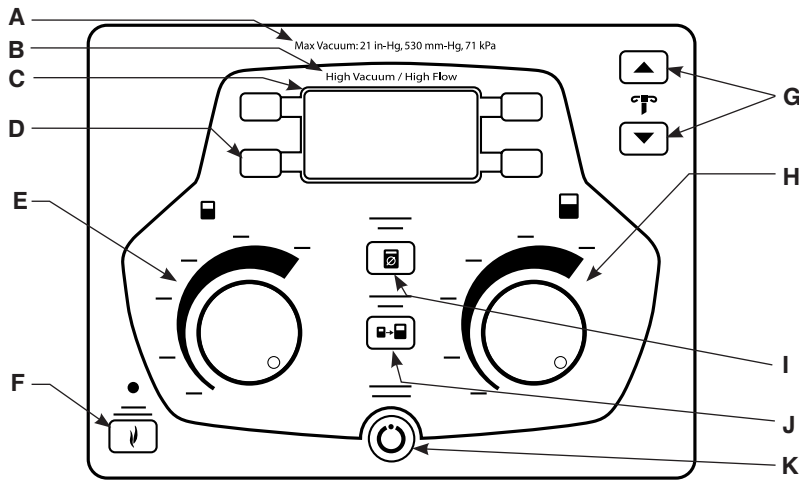


Figure 2 Control Panel

A	Max. Vacuum: 21 in-Hg, 530 mm-Hg, 71 kPa - See Specifications.	G	IV Pole Height Adjust Buttons - Press the UP or DOWN arrow button to increase or decrease the height of the IV pole, respectively.
B	High Vacuum / High Flow - Indicates this equipment is a high vacuum, high flow medical device.	H	20-liter Vacuum Limit Setting Dial - Turn the dial to adjust the vacuum limit level (fluid suction) of the 20-liter canister. Graduations of 20% are provided as an adjustment guide. The vacuum level status will be indicated on the control panel display as a limit SET value or real time ACTUAL value. See Control Panel Display.
C	Control Panel Display - Provides vacuum level values for each canister, system status and error messages; also displays wash cycle options.	I	Volume Reset Button - Press the button to reset the displayed fluid volume of both canisters to zero values.
D	Control Panel Display Push Buttons (four) - Press the appropriate button when the display provides push button label areas.	J	Empty Tank Button - Press the button to empty the contents of the small canister into the large canister.
E	4-liter Vacuum Limit Setting Dial - Turn the dial to adjust the vacuum limit level (fluid suction) of the 4-liter canister. Graduations of 20% are provided as an adjustment guide. The vacuum level status will be indicated on the control panel display as a limit SET value or real time ACTUAL value. See Control Panel Display.	K	Stand-by (Vacuum System) Button- Press the button to activate or deactivate the system's fluid suction capability.
F	Smoke Evacuator Button - Press the button once to access the manual mode of operation. Press the button a second time to access automatic smoke evacuation. Press the button a third time to stop smoke evacuation from the surgical site.		

Features (cont'd)

Control Panel Display (see figure 3)

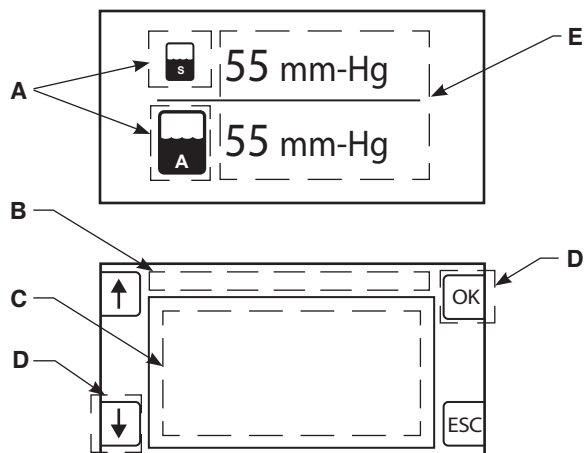


Figure 3 Control Panel Display

A	Canister Identification/Vacuum Level Status Areas - Two areas that identify the specific canister and its corresponding vacuum level status. 'S' indicates the vacuum limit SET value. The system may fluctuate significantly to a lower value, but will not exceed the limit set value. 'A' indicates the ACTUAL or real time vacuum value.
B	Title Area - Area indicates the type of message displayed, including warnings, wash cycle options, and errors.
C	Message Area - Area displays system warnings, wash cycle options, and error message information.
D	Push Button Label Areas - Four areas that correspond to the adjacent control panel display push buttons and indicate the button's function. See <i>Button Label and Screen Icon Definitions</i> .
E	Vacuum Level Areas - Two areas that provide vacuum level values for each canister (units of measurement may be changed).

Button Label and Screen Icon Definitions

LABEL OR ICON	NAME	DEFINITION
	DOWN/DECREASE	Scroll down to highlight an option or decrease a value.
	UP/INCREASE	Scroll up to highlight an option or increase a value.
	ERROR INDICATOR	Access ERRORS screen to view error(s). See <i>Error Messages</i> .
	ESC	Close or ESCape a screen without accepting changes or selections and return to previous screen.
	OK	Accept changes and return to the previous screen. Select an error message and access message screen.
	RESET	Change or RESET the timer value when either the fluid suction filter or the smoke evacuator filter is replaced.
	SYSTEM SETUP	Access the System Setup screen to change system setting options.
	SELECT MARK	Icon indicates screen option is selected and applied.
	SEE INSTRUCTIONS FOR USE	Icon indicates the need to consult instructions for use, specifically error message information.

Instructions

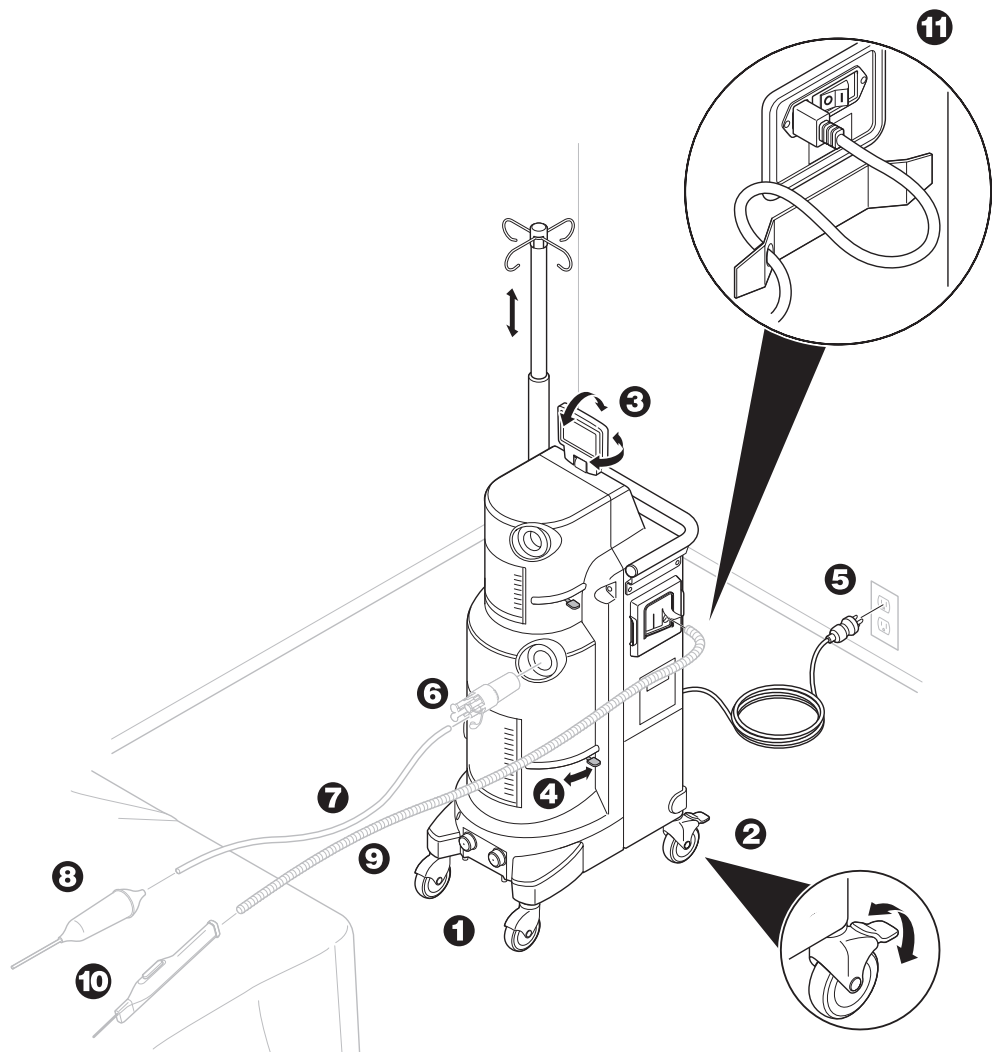










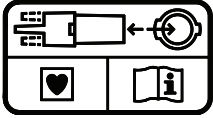
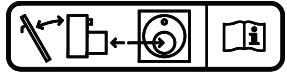
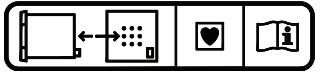


Figure 4 To Prepare Rover for Collection

Symbol Definitions

								
ON	OFF	4L 4-LITER	20L 20-LITER	IV POLE HEIGHT ADJUST	VOLUME RESET	EMPTY TANK	STAND-BY (FOR VACUUM SYSTEM)	SMOKE EVACUATOR

			
VACUUM LIMIT SETTING	MANIFOLD PORT	FLUID SUCTION FILTER COMPARTMENT	SMOKE FILTER COMPARTMENT

Instructions

To Prepare Rover for Collection (see figure 4)



WARNING: DO NOT place the rover on a surface that exceeds the acceptable range of the inclined plane of operation. See *Specifications*.

NOTES:

- Ensure the rover has been initially setup and tested with the docker prior to use. If setup and testing is required or a system setting needs to change, see the *Appendix* section for instructions.
 - Ensure the smoke evacuator filter and fluid suction HEPA filter are operational before collection. See the instructions for use supplied with the filters for installation information.
 - See the *Audible Event Indicators* table for information about the audible sounds heard during the rover's operation.
 - The volume of the initial prefill fluid in the canister(s) is accounted for in the fluid level value indicated on the fluid level display. Foam does not affect this fluid level value.
1. Place the rover on a flat surface and in a convenient location within the operating room. Inspect the rover. See *Periodic Maintenance*.
 2. Lock the rover's two rear casters in place to prevent inadvertent rover movement.
 3. Orient the rover's fluid level display for optimal viewing.
 4. Open the canister access doors to allow viewing of the contents.
 5. Connect the rover to facility electrical power using the power cord.
 6. Install the disposable manifold(s) into the manifold port(s). Ensure the manifold(s) are locked into place. See the instructions for use supplied with the manifold for more information.
 7. Attach the suction tubing to the port(s) of the installed manifold(s).
 8. Attach a suction accessory to the end of the suction tubing if required.
 9. Install the smoke evacuator tubing to the smoke evacuator filter if required.
 10. Attach a smoke evacuator accessory to the end of the smoke tubing if required.
 11. Push the power switch to the ON position.
 12. Push the VOLUME RESET button on the control panel.
 13. See *To Operate Rover During Collection*.

Audible Event Indicators

TYPE	DESCRIPTION	EVENT
Button Feedback	One short beep	EMPTY TANK button pressed; Empty Tank started VOLUME RESET button pressed
Task Completion	Three short beeps	Power up initialization finished; Rover ready to use Empty Tank finished
Noncritical Error	One long beep	Error occurred that does not shut down system
Action Required	Three long beeps	Error occurred that shuts down system Volume level reaches adjustable "remaining capacity" Volume level reaches "full capacity"

To Operate Rover During Collection



WARNINGS:

- DO NOT touch or make contact with the rover and the patient at the same time.
- Follow the current local regulations governing biohazardous waste to safely handle and dispose of surgical fluid waste.

NOTE: Ensure the rover has been prepared for collection properly. See *To Prepare Rover for Collection*.

1. Push the VACUUM SYSTEM button on the control panel to start fluid suction.
2. Rotate the appropriate VACUUM (LIMIT) SETTING dial to adjust the maximum suction level of the 4-liter and 20-liter canister.
3. When smoke evacuation is required, push the SMOKE EVACUATOR button on the control panel. The button has three modes of operation: manual, automatic, and off. Push the button once for manual mode, twice for automatic mode (AUTO), and a third time to stop the smoke evacuator. From the smoke evacuator screen on the control panel display, push the buttons next to the arrow icons to increase or decrease the evacuator power level as required (see figure 5).



Figure 5 Smoke Evacuator Power Control Screen

4. When the IV pole requires height adjustment, push the IV pole UP or DOWN arrow buttons on the control panel to increase or decrease the pole height, respectively.

NOTES:

- To reset or zero the fluid level value on the fluid level display, push the VOLUME RESET button on the control panel. Both canister fluid level values will display a zero value. If power is lost and restored, the rover will display an accurate fluid level value.
- If the 4-liter canister is full of fluid waste, verify the 20-liter canister has the capacity to receive the contents of the 4-liter canister. If sufficient capacity is available, push the EMPTY TANK button on the control panel. The EMPTY TANK action will continue until the 20-liter canister no longer has the capacity to receive fluid waste or 4-liter canister is empty. A maximum of three EMPTY TANK button events are allowed.
- When pressed, the EMPTY TANK button will cause fluid suction from the 4-liter canister to stop temporarily for about 30 seconds. However, the 20-liter canister will immediately assume the same fluid suction setting of the 4-liter canister. The 4-liter and 20-liter canisters will return to their previous fluid suction settings after the EMPTY TANK action is complete.
- 5. If one or both canisters are full of fluid waste, or waste disposal is required, prepare the rover for relocation and waste disposal. See *Overflow Event Indications and Actions*, *To Prepare Rover for Relocation after Collection*, and *To Dock Rover for Waste Disposal*.

Instructions (cont'd)

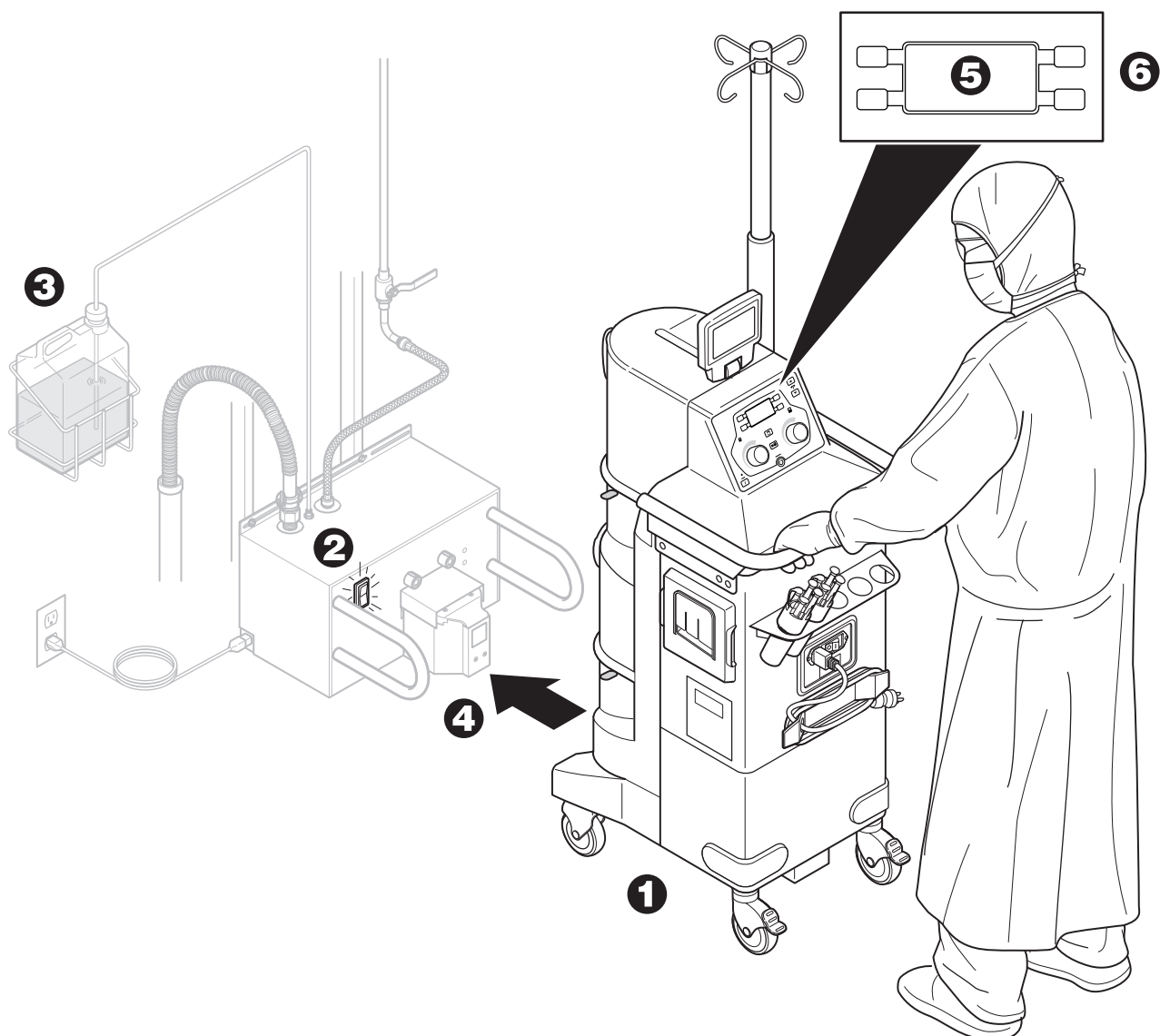


Figure 6 To Dock Rover for Waste Disposal

To Operate Rover During Collection (cont'd)

Overfill Event Indications and Actions

VOLUME CAPACITY CONDITIONS	INDICATIONS	ACTION
The volume level reaches an adjustable remaining capacity.	Three long audible beeps.	The collection canister system is full. Relocate the rover and dispose of waste.
The volume level reaches full capacity.	Three long audible beeps and the fluid level display screen flashes FULL.	Fluid suction will stop. Relocate the rover and dispose of waste.
If the volume level exceeds full capacity, the fluid level will cause a float to close the canister system and prevent fluid from escaping.	Fluid suction will not work.	Relocate the rover and dispose of waste.

Instructions

To Prepare Rover for Relocation After Collection

1. Remove all disposable accessories, including suction nozzles, suction tubing, manifolds, and smoke evacuator tubing with any attachments from the rover. See the instructions for use supplied with the disposable accessories for proper handling and disposal procedures.

NOTE: If raised, the IV pole will decrease its height automatically when power is removed from the rover to ensure proper clearance during relocation.

2. Push the power switch to the OFF position.
3. Disconnect the rover from facility electrical power and remove the power cord. Wrap the power cord around the cord bracket.
4. Using the knobs, close the canister access doors to conceal the contents.
5. Clean the rover. See *Cleaning Recommendations*.
6. Unlock the two rear casters of the rover.



WARNING: ALWAYS remove the disposable accessories before relocating the rover. ALWAYS use the handle to retain control of the rover during relocation.

7. If the canisters are full or the rover contains fluid waste and will not be used within 6 hours, use the rover handle to push and relocate the rover to the docking station. See *To Dock Rover for Waste Disposal*.
8. If the canisters are not full and the rover will be used within six hours, use the rover handle to push and relocate the rover to the desired location. See *To Prepare Rover for Collection*.

NOTE: The rover does not have to be connected to facility power when not in use.

To Dock Rover for Waste Disposal (see figure 6)

NOTE: From the Select Cycle screen, the rover may be detached by pushing the button next to the ESC icon. The wash cycle may be stopped by pushing the button next to the ESC icon.

1. Place the rover in front of the docking station.
2. Ensure the power switch on the docking station is in the ON position and illuminated.

NOTE: Before docking the rover, always allow the docker to warm up for at least 60 seconds after applying power to the docker.

3. Ensure the Stryker-approved detergent bottle is connected, has enough detergent to perform a wash cycle, and the end of the inlet tube is located at the bottom of the bottle.
4. Push the rover toward the docking station and between the guides until the rover and docking station attach automatically.
5. Verify the Select Cycle screen appears on the control panel display (see figure 7).

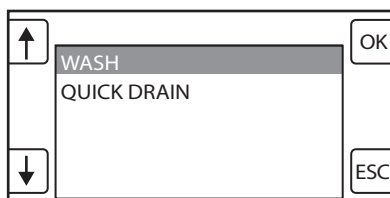


Figure 7 Select Cycle Screen

NOTE: If a specific wash cycle is not selected within ten seconds, the "Wash" cycle (see *Wash Cycle Options*) will be performed automatically.

6. From the Select Cycle screen, push the buttons next to the arrow icons to scroll and highlight the appropriate wash cycle. Push the button next to the OK icon to select the highlighted cycle.

Wash Cycle Options

CYCLES	DESCRIPTION	TIME (approx.)
Wash	Cycle drains the contents, applies detergent to the interior walls of both canisters, and rinses the detergent with water.	5 minutes
Quick Drain	Cycle drains the contents of both canisters.	2 minutes

7. After the cycle is complete, the Docking Complete screen will appear on the control panel display (see figure 8). Push the button next to the OK icon to detach the rover from the docking station. Pull the rover away from the docking station.

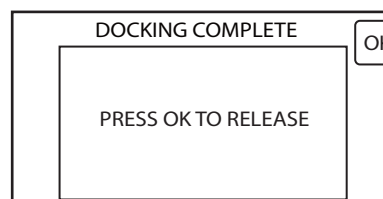


Figure 8 Docking Complete Screen

NOTE: Liquid or prefill will remain inside each canister after a cycle is complete. Prefill contains a specified amount of detergent for initiating the break down of fluid waste collected during the rover's next use.

8. Clean the docker. See *Cleaning Recommendations*.
9. If the rover will be used again, use the rover handle to push and relocate the rover. See *To Prepare Rover for Collection*. If the rover will no longer be used, use the rover handle to push and relocate the rover to a storage area.

Cleaning Recommendations

CAUTION: DO NOT use glutaraldehyde or similar chemical cleaners on the rover or docker.

1. Wipe the external surfaces of the rover and/or docker with a soft cloth dampened with a non-abrasive, hospital disinfectant.
2. Thoroughly wipe the infrared communication windows to ensure the rover and docker can communicate and function properly.
3. Inspect the rover. See *Periodic Maintenance*.

Storage and Handling

To ensure the longevity, performance, and safety of this equipment, use the original packaging when storing or transporting this equipment.

Periodic Maintenance

INTERVAL	ACTIVITY
Prior to each use and after each cleaning	Inspect the collection canister(s) and smoke evacuator filter cover for cracks, the two casters for failed locks, and the infrared communication window for damage or obstructions. Ensure there are no cuts in the power cord and no bent pins in the power cord receptacle. DO NOT use the equipment if damage is apparent.
Six months	Replace the fluid suction HEPA filter. Inspect the docker plumbing connections and hoses for leaks. Repair any plumbing to stop leakage as required. Replace leaking hoses as required.
As required	Check the level of the detergent in the dispensing bottle. Replace the bottle of detergent as required.

Troubleshooting Guide*

PROBLEM	CAUSE	ACTION
Rover Operation		
The rover does not power up and the power switch is in the ON position.	Power cord is not connected or is not connected securely.	Connect the power cord or ensure the power cord is connected securely.
No vacuum pump action after the VACUUM SYSTEM button is pressed.	Solid or liquid material has entered the vacuum pump.	Remove the rover from use. Contact Stryker service.
	Collection canisters are full.	Dock the rover.
The rover's fluid suction is insufficient.	The fluid suction HEPA filter requires replacement.	Replace the fluid suction HEPA filter. See the instructions for use supplied with the filter.
	The vacuum limit setting dials are adjusted too low.	Adjust the vacuum limit setting dials to increase fluid suction.
	Unused manifold ports are open on either canister.	Close all unused manifold ports on each canister.
The rover's suction capability is lost.	The vacuum motor is damaged.	Remove the rover from use. Contact Stryker service.
The rover's vacuum level (fluid suction) cannot be adjusted or cannot reach the maximum level.	The vacuum motor or sensor is damaged.	Remove the rover from use. Contact Stryker service.
	Unused manifold ports are open on either canister.	Close all unused manifold ports on each canister.
A filter error appears on the control panel display.	The fluid suction HEPA filter has exceeded its useful life.	Replace the fluid suction HEPA filter.
	The smoke evacuator filter has exceeded its useful life.	Replace the smoke evacuator filter.
The rover is releasing a strong odor.	The fluid suction HEPA filter has exceeded its useful life.	Replace the fluid suction HEPA filter.
	Docker does not dispense detergent during the cleaning cycle. Bottle of detergent is empty.	Replace the bottle of the detergent. See the label instructions on the Stryker-approved detergent.
The smoke evacuator fails to operate after activation (smoke evacuator button is pushed).	The smoke evacuator is damaged.	Remove the rover from use. Contact Stryker service.
A smoke evacuator error appears on the control panel display.	The smoke evacuator filter is damaged.	Replace the smoke evacuator filter.
	The smoke evacuator filter is not installed.	Install the smoke evacuator filter. See <i>instructions for use</i> supplied with filter.
	The smoke evacuator filter is installed incorrectly.	Install the smoke evacuator filter again. See <i>instructions for use</i> supplied with filter.
IV pole height cannot be increased.	IV pole is supporting too much weight.	Remove excessive weight from IV pole.
	IV pole motor is overheated.	Wait ten minutes. Press appropriate IV pole height adjust button.
Fluid does not drain from the small canister into the large canister after pressing the EMPTY TANK button.	A fluid waste clog exists at the bottom of the small canister.	Remove the rover from use. Close all used and unused manifold ports. Turn both Vacuum Limit Setting dials to the maximum value. Press the EMPTY TANK button. Contact Stryker service if the clog persists.
An error occurs during EMPTY TANK procedure.	More than three EMPTY TANK procedures have been attempted.	Dock the rover.
	The contents of the small canister cannot fit into the large canister.	Dock the rover.
	The rover was unable to prefill the small canister	Dock the rover.
Sporadic electrical interference is experienced.	Electrical noise is present.	Turn off all the electrical equipment in the room.
		Relocate the electrical equipment to maximize the distance between the equipment. Increase spatial distance.
		Plug equipment into different outlets.
Docking Operation		
The rover will not dock or an error occurs during docking.	The docker is not receiving facility water.	Ensure water inlet hose is connected correctly. Ensure the facility water supply valve is open. Dock the rover.
	Communication between the rover and docker is interrupted.	Pull the rover away from the docker. Remove and apply power to the docker. Wait 60 seconds. Dock the rover.
Docker does not dispense detergent during the cleaning cycle.	Bottle of detergent is empty.	Replace the bottle of the detergent. See the label instructions on the Stryker-approved detergent.
	The end of the detergent inlet tube is not immersed in the detergent.	Push the end of the detergent inlet tube to the bottom of the detergent bottle.
	The detergent inlet tube is not connected securely to the detergent inlet port of the docker.	Connect the detergent inlet tube to the detergent inlet port of the docker securely.
An error occurs during docking and the rover cannot be removed from docker.	The fluid connectors prevent the removal of the rover from the docker.	Remove and apply power to the docker. Wait 10 seconds. Pull the rover away from the docker.











*DO NOT service this equipment. If you require service, contact your Stryker sales representative or call Stryker Neptune customer service at 1-800-550-7836. Outside the US, contact your nearest Stryker subsidiary.

Error Messages*

CODE	MESSAGE	ACTION	CODE	MESSAGE	ACTION
0.0	SYSTEM ERROR	CALL SERVICE	8.0	LEVEL SCAN ERROR	CALL SERVICE
0.1	SYSTEM ERROR	CALL SERVICE	8.1	LEVEL SCAN ERROR	CALL SERVICE
0.2	SYSTEM ERROR	CALL SERVICE	8.3	LEVEL SCAN ERROR	CALL SERVICE
0.3	SYSTEM ERROR	CALL SERVICE	8.4	LEVEL SCAN ERROR	CALL SERVICE
0.4	SYSTEM ERROR	CALL SERVICE	8.6	LEVEL SCAN ERROR	CALL SERVICE
1.0	MEMORY ERROR	CALL SERVICE	8.7	LEVEL SCAN ERROR	CALL SERVICE
1.1	MEMORY ERROR	CALL SERVICE	9.0	POLE ERROR	CALL SERVICE
1.2	MEMORY ERROR	CALL SERVICE	9.1	POLE ERROR	REDUCE POLE LOAD WEIGHT
1.3	MEMORY ERROR	CALL SERVICE	9.2	POLE ERROR	WAIT 60 SEC; TRY POLE AGAIN
1.4	MEMORY ERROR	CALL SERVICE	10.0	SMOKE ERROR	CALL SERVICE
1.5	MEMORY ERROR	CALL SERVICE	10.1	SMOKE ERROR	CALL SERVICE
1.6	MEMORY ERROR	CALL SERVICE	10.2	SMOKE ERROR	CHECK SMOKE FILTER; REPLACE SMOKE FILTER
1.7	MEMORY ERROR	CALL SERVICE	11.0	VOL DISPLAY ERROR	CALL SERVICE
1.8	MEMORY ERROR	CALL SERVICE	12.0	CANISTER ERROR	CALL SERVICE
2.2	SYSTEM ERROR	CALL SERVICE	12.1	CANISTER ERROR	CALL SERVICE
3.0	DOCKER ERROR	REMOVE ROVER - CYCLE DOCKER POWER - WAIT 60 SECONDS - DOCK ROVER AGAIN	12.2	CANISTER ERROR	CALL SERVICE
3.1	DOCKER ERROR	REMOVE ROVER - CYCLE DOCKER POWER - WAIT 60 SECONDS - DOCK ROVER AGAIN	12.4	CANISTER ERROR	CALL SERVICE
3.2	DOCKER ERROR	CALL SERVICE	12.5	CANISTER ERROR	CALL SERVICE
3.3	DOCKER ERROR	CALL SERVICE	12.6	CANISTER ERROR	CALL SERVICE
3.4	DOCKER ERROR	CALL SERVICE	12.7	CANISTER ERROR	CALL SERVICE
3.5	DOCKER ERROR	CHECK FACILITY WATER SUPPLY; DOCK ROVER AGAIN	13.0	VACUUM ERROR	CALL SERVICE
3.6	DOCKER ERROR	CHECK FACILITY WATER SUPPLY; DOCK ROVER AGAIN	13.1	VACUUM ERROR	CALL SERVICE
3.7	DOCKER ERROR	CALL SERVICE	13.2	VACUUM ERROR	CALL SERVICE
3.12	DOCKER ERROR	DOCK ROVER AGAIN	13.3	VACUUM ERROR	CALL SERVICE
3.13	DOCKER ERROR	REMOVE ROVER - CYCLE DOCKER POWER - WAIT 60 SECONDS - DOCK ROVER AGAIN	13.4	VACUUM ERROR	CALL SERVICE
4.0	EMPTY TANK ERROR	DOCK ROVER FOR WASTE DISPOSAL	13.5	VACUUM ERROR	CALL SERVICE
4.1	EMPTY TANK ERROR	CALL SERVICE	13.6	VACUUM ERROR	CALL SERVICE
4.2	EMPTY TANK ERROR	CALL SERVICE	13.7	VACUUM ERROR	CALL SERVICE
4.3	EMPTY TANK ERROR	CALL SERVICE	13.8	VACUUM ERROR	CALL SERVICE
4.4	EMPTY TANK ERROR	DOCK ROVER	13.10	VACUUM ERROR	CALL SERVICE
4.5	EMPTY TANK ERROR	DOCK ROVER	14.0	VACUUM ERROR	CALL SERVICE
5.0	FILTER ERROR	REPLACE FLUID SUCTION HEPA FILTER	14.1	VACUUM ERROR	CALL SERVICE
5.1	FILTER ERROR	REPLACE SMOKE FILTER	14.2	VACUUM ERROR	CALL SERVICE
6.0	VALVE ERROR	CALL SERVICE	14.3	VACUUM ERROR	CALL SERVICE
6.1	VALVE ERROR	CALL SERVICE	14.4	VACUUM ERROR	CALL SERVICE
7.0	LEVEL ERROR	CALL SERVICE	14.5	VACUUM ERROR	CALL SERVICE
7.1	LEVEL ERROR	CALL SERVICE	14.8	VACUUM ERROR	CALL SERVICE
7.2	LEVEL ERROR	CALL SERVICE	14.9	VACUUM ERROR	CALL SERVICE
7.7	LEVEL ERROR	CHECK FACILITY WATER SUPPLY; DOCK ROVER AGAIN	14.10	VACUUM ERROR	CALL SERVICE
7.8	LEVEL ERROR	CHECK FACILITY WATER SUPPLY; DOCK ROVER AGAIN	14.11	VACUUM ERROR	CALL SERVICE

*DO NOT service this equipment. If you require service, contact your Stryker sales representative or call Stryker Neptune customer service at 1-800-550-7836. Outside the US, contact your nearest Stryker subsidiary.


Specifications¹

Model:	Neptune 2 Rover-ULTRA	
REF:	0702-001-000	
Electrical Power Requirements:	120 V ~, 60 Hz, 12.0 A, single phase 20 V $\overleftrightarrow{\sim}$ 3 A during docking procedure; rover receives power from docking station	
Size:	19 inch [48.3 cm] width 23 inch [58.4 cm] depth 102 inch [259 cm] height (IV pole up) 70 inch [177.8 cm] height (IV pole down)	
Vacuum Range:	2 to 21 in-Hg [50 to 530 mm-Hg, 7 to 71 kPa] (measured with all ports closed)	
Vacuum Measurement:	\pm 5% of full scale (\pm 1.05 in-Hg)	
Weight:	300 lbs. [136 kg] - collection empty 353 lbs. [160 kg] - collection full	
Volume:	24-liter capacity (combination of 4 and 20 liter canisters)	
Volume Measurement: ²	4-liter canister - \pm 50 mL 20-liter canister - \pm 150 mL	
Inclined Plane of Operation:	\pm 2.5 degrees	
Equipment Type:	<div> Class I, Type CF Applied Part</div>	
Enclosure Protection:	IPX0 Ordinary Equipment	
Infrared Communication Windows:	<div></div>	
Protective Earth Ground:	<div></div>	
Approval:	<div><div> C US</div><div>CSA International CAN/CSA-C22.2 No. 601.1 M90: 2003 BS EN 60601-1: 1997 UL 60601-1: 2003</div></div>	
Environmental Conditions:	<div><div><div>Operation</div><div><div>Temperature</div><div>1040°C</div></div><div><div>Relative Humidity</div><div>3075%</div></div><div><div>Atmospheric Pressure</div><div>7001060 hPa</div></div></div><div><div>Storage and Transportation</div><div><div>Temperature</div><div>-2040°C</div></div><div><div>Relative Humidity</div><div>1075%</div></div><div><div>Atmospheric Pressure</div><div>5001060 hPa</div></div></div></div>	

¹Specifications are approximate and may vary from unit to unit or by power supply fluctuations.
²Volume measurements specified do not account for fluid evaporation or an inclined plane of operation that exceeds the specified range.

Specifications

Guidance and manufacturer's declaration - electromagnetic emissions		
The Neptune 2 ULTRA Rover is intended for use in the electromagnetic environment specified below. The customer or the user of the Neptune 2 ULTRA Rover should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The Neptune 2 ULTRA Rover uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment. The Neptune 2 ULTRA Rover is suitable for use in all establishments other than domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
RF emissions CISPR 11	Class A	
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacturer's declaration - electromagnetic immunity			
The Neptune 2 ULTRA Rover is intended for use in the electromagnetic environment specified below. The customer or the user of the Neptune 2 ULTRA Rover should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms 150 kHz to 80 MHz	<p>Portable and mobile RF communications equipment should be used no closer to any part of the Neptune 2 ULTRA Rover, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance</p> $d = 1.67 \sqrt{P}$ <p>80 MHz to 800 MHz</p> $d = 2.33 \sqrt{P}$ <p>800 MHz to 2.5 GHz</p> <p>Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m)</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m 80 MHz to 2.5 GHz	

NOTE 1: At 80 MHz and 800 MHz the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Specifications

Guidance and manufacturer's declaration - electromagnetic immunity			
The Neptune 2 ULTRA Rover is intended for use in the electromagnetic environment specified below. The customer or the user of the Neptune 2 ULTRA Rover should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±2, 4, 6 kV contact ±2, 4, 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% U_T (>95% dip in U_T) for 0,5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 sec	95% Reduction (10 ms) 60% Reduction (100 ms) 30% Reduction (500 ms) 95% Reduction (5 s)	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Neptune 2 ULTRA Rover requires continued operation during power mains interruptions, it is recommended that the Neptune 2 ULTRA Rover be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m @ 50 Hz CRT 1 A/m	Power frequency magnetic fields should be at levels characteristics of a typical location in a typical commercial or hospital environment.

NOTE: U_T is the a.c. mains voltage prior to application of the test level.

Specifications

Recommended separation distances between portable and mobile RF communications equipment and the Neptune 2 ULTRA Rover			
The Neptune 2 ULTRA Rover is intended for use in the electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Neptune 2 ULTRA Rover can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Neptune 2 ULTRA Rover as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = [\frac{3,5}{V_1}] \sqrt{P}$	80 MHz to 800 MHz $d = [\frac{3,5}{E_1}] \sqrt{P}$	800 MHz to 2.5 GHz $d = [\frac{7}{E_1}] \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.74
1	1.17	1.17	2.33
10	3.70	3.70	7.37
100	11.70	11.70	23.30

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Appendix

To Adjust System Settings

- 1. Verify the power switch is in the OFF position.
- 2. Ensure the power cord is connected between the rover and facility power.
- 3. Push the control panel display button and the power button to ON simultaneously (see figure 9).

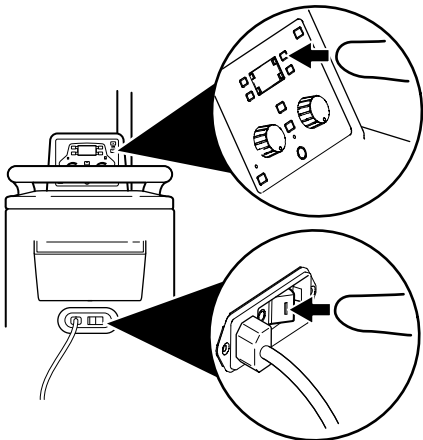


Figure 9 To Access System Setup

- 4. Continue to push the display button until the Neptune 2 splash screen appears. The system setup screen will appear after the splash screen (see figure 10).

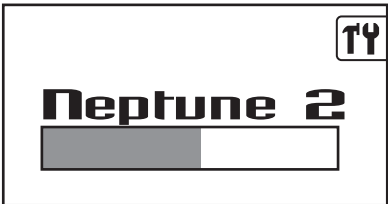


Figure 10 Neptune Splash Screen

- 5. From the System Setup screen, push the buttons next to the arrow icons to highlight the appropriate system setting (see figure 11).

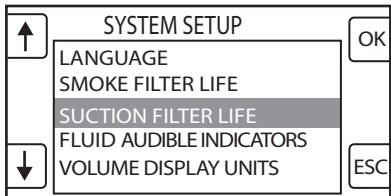


Figure 11 System Setup Screen

- 6. From the System Setting screen, push the buttons next to the arrow icons to highlight or adjust the appropriate setting option (see figure 12). See *System Setting Options* table for available setting options.

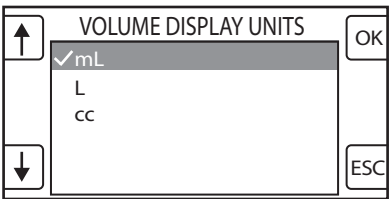


Figure 12 Sample System Setting Screen

- 7. Push the button next to the OK icon to select the appropriate system setting option. Push the button next to the ESC icon to cancel the selection and exit the screen.

NOTE: To reset the smoke filter timer or HEPA filter timer, see the instructions for use supplied with the filter for more information.

System Setting Options

SETTINGS	OPTIONS	FACTORY DEFAULT
Volume Display Units	mL [milliliter] L [liter] cc [cubic centimeters]	mL
Volume Display Bright	0 - 100%	50%
Fluid Audible Indicators	4-liter canister 20-liter canister	600 mL (remaining capacity) 2000 mL (remaining capacity)
Vacuum Display Units	in-Hg [inches of mercury] mm-Hg [millimeters of mercury] kPa [kilopascals]	in-Hg
Vacuum Display Bright	0 - 100%	50%
Vacuum Display Contrast	0 - 100%	50%
Smoke Filter Life	RESET TIMER TO ACCEPT	80 hours
Suction Filter Life	RESET TIMER TO ACCEPT	500 hours
Language	English Spanish [Espanol] French [Francais] German [Deutsch] Italian [Italiano] Polish [Polski] Chinese Japanese	English (only) (future availability) (future availability) (future availability) (future availability) (future availability) (future availability) (future availability)

Appendix (cont'd)

To Test the Rover Operation

NOTE: See *To Adjust System Settings* to review the default settings and make changes if required.

1. Connect the rover to facility electrical power using the power cord. Thread the appropriate plug of the power cord through the strain relief hole before connecting the cord to the rover (see figure 13).

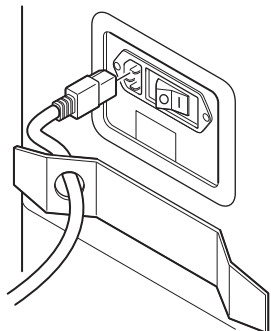


Figure 13 Power Cord Strain Relief

2. Push the vacuum system button to start the vacuum pump.
3. Adjust the vacuum limit setting dial of the canister to be tested to the maximum vacuum level. Ensure the value displayed on the control panel changes and eventually reaches the maximum vacuum level. If not, see *Troubleshooting Guide*.
4. Repeat steps 2 and 3 to test the other canister.
5. Push the up and down arrow buttons that control the IV pole. Ensure the IV pole functions correctly. If not, see *Troubleshooting Guide*.
6. Push the smoke evacuator button. From the smoke control screen, push the buttons next to the arrow icons to adjust the smoke evacuator power. Ensure smoke evacuation functions correctly. If not, see *Troubleshooting Guide*.

To Test the Docking Station Operation

NOTE: Ensure the rover is functioning properly. See *To Test the Rover*.

1. Install a disposable manifold into the rover and attach a suction tube to one manifold port. Ensure all the other manifold ports are capped.
2. Connect the rover to facility power and push the power switch to the ON position.
3. Push the vacuum system button to start the vacuum pump.
4. Place the attached suction tube into a sink or bucket of water. Rotate the vacuum limit setting dial to suction about two liters of water into each canister.
5. After each canister is filled, push the power switch to the OFF position. Remove the rover from facility power. Remove the disposable manifold and suction tube.
6. Place the rover in front of the docking station. Push the rover into the docking station using the guides for alignment purposes until attachment occurs automatically.
7. From the Select Cycle screen on the control panel display, push the button next to the arrow icons to scroll and highlight the desired Wash cycle. Push the button next to the OK icon to select the cycle.

NOTE: If a cycle is not selected, the Wash cycle will be selected as the default cycle.

8. During the Wash cycle, inspect all the docking station plumbing and connections for any leakage. If leakage occurs, repair as required.
9. After the cycle is complete, pull the rover away from the docking station.

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JA, ZH, KO 0702-002-717
SV, DA, FI, PT, NO 0702-002-730
PL, EL 0702-002-750

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